REMARKS

Favorable reconsideration of the subject application is respectfully requested in view of the above amendments and the following remarks. Claims 1-10 and 12-26 are pending, and claims 12 and 20-26 are under consideration. Claims 12, 21, 24 and 26 have been amended to more specifically recite certain aspects of the invention. Claim 12 has also been amended to correct the dependency. Support for the amendments may be found throughout the specification and claims as originally filed, and it is urged that the amendments do not constitute new matter. It should also be noted that the above amendments are not to be construed as acquiescence with regard to the Examiner's rejections and are made without prejudice to prosecution of any subject matter removed or modified by this amendment in a related divisional, continuation or continuation-in-part application.

Information Disclosure Statements

Applicants note that the first reference, AA, cited in the Information Disclosure Statement filed January 18, 2002, was not initialed by the Examiner. Applicants respectfully request that the Examiner confirm consideration of this reference by initialing the same and providing Applicants with a copy of the initialed Form PTO-1449.

Priority

The Action denies Applicants' claim of priority to applications filed prior to U.S. Application Serial No. 09/560,406, alleging that there is no support for SEQ ID NO:809 in these earlier filed application.

Applicants respectfully request that the Examiner reconsider the priority determination and grant priority to U.S. Application Serial No. 09/519,642, filed March 6, 2000, since this application discloses a sequence (SEQ ID NO:786) with homology to SEQ ID NO:809 that includes regions identical to regions of SEQ ID NO:809, including immunogenic portions, as described, *e.g.*, on page 40, line 27 to page 41, line 29.

Rejection Under 35 U.S.C. § 112, First Paragraph

Claims 12, 24 and 26 stand rejected under 35 U.S.C. § 112, first paragraph, for allegedly containing subject matter not described in the specification so as to reasonably convey to the skilled artisan that the inventors had possession of the claimed invention at the time of filing. More specifically, the Action alleges that the instant specification fails to provide adequate written description for two reasons. First, the Action alleges that the instant specification fails to adequately describe T cells specific for polypeptides of SEQ ID NO:809, since it only describes such T cells in functional terms and provides no structural requirements or working examples of such T cells. In addition, the Action alleges that the instant specification lacks adequate written description to support the genus of polypeptides having at least 90% identity to a polypeptide of SEQ ID NO:809, since it only discloses one species within this genus and provides no structural limitations or requirements to assist in the identification of sequences that meet the functional limitations of the claims.

Applicants respectfully traverse these bases of rejection.

Applicants submit that the instant specification provides sufficient description of T cells specific for polypeptides of SEQ ID NO:809 (L552S) to demonstrate that Applicants were in possession of the claimed invention at the time of filing. Under the Examination Guidelines set forth by the Patent and Trademark Office, the written description requirement for a claimed genus may be satisfied by the disclosure of relevant, identifying characteristics, sufficient to show the applicant was in possession of the claimed genus. (Guidelines for Examination of Patent Applications under the 35 U.S.C. § 112, ¶1, "Written Description" Requirement, 66 Fed. Reg. 1099, at 1106.) Applicants submit that the instant application meets this criteria.

As an initial matter, Applicants note that a variety of factors must be considered in determining whether the written description requirement is met. These factors include "the level of skill and knowledge in the art, partial structure, physical and/or chemical properties, functional characteristics alone or coupled with a known or disclosed correlation between structure and function, and the method of making the claimed invention." *Id.* Applicants note that the Examination Guidelines again acknowledge that functional characteristics can be

sufficient to show possession, when stating, "[a]lthough structural formulas provide a convenient method of demonstrating possession of specific molecules, other identifying characteristics may demonstrate the requisite possession," and noting, "[f]or some biomolecules, examples of identifying characteristics include a sequence, structure, binding affinity, binding specificity, molecular weight, and length." *Id.*, endnote 42. Applicants further submit that both cases cited by the Action for the general proposition that functional characteristics alone are insufficient to satisfy the written description requirement specifically pertained to nucleic acid sequences, not T cells.

Applicants respectfully submit that consideration of all relevant factors identified above leads to the conclusion that the instant application provides adequate written description of the claimed T cells. Applicants submit that the level of skill in the art of preparing and identifying T cells specific for a particular antigen is such that the skilled artisan would recognize that Applicants had possession of the claimed T cells, based upon the description of the method used to produce such T cells, the disclosure of the polypeptide sequence of SEQ ID NO:809, and general knowledge in the art. In addition, Applicants note that claim 12 has been amended to recite the additional limitation that the T cells are specific for an immunogenic portion of the amino acid sequence of SEQ ID NO:809, thus providing yet another identifying characteristic described above as demonstrating possession. Support for this amendment is provided, *e.g.*, on page 127, lines 2-3.

Applicants further submit that the instant claim drawn to T cells specific for an identified polypeptide is analogous to a claim drawn to an antibody specific for an identified polypeptide, for which the written description requirement is clearly satisfied, as explained by the Federal Circuit in *Enzo Biochem, Inc. v. Gen-Probe, Incorporated,*

> "In its Guidelines, the PTO has determined that the written description requirement can be met by "show[ing] that an invention is complete by disclosure of sufficiently detailed, relevant identifying characteristics . . . i.e., complete or partial structure, other physical and/or chemical properties, functional characteristics when coupled with a known or disclosed correlation between function and structure, or some combination of such characteristics." Guidelines, 66 Fed. Reg. at 1106 (emphasis added). For example, the PTO would find compliance with § 112, ¶ 1, for a claim to an "isolated antibody capable of binding to antigen X," notwithstanding the functional definition of the antibody,

> in light of "the well defined structural characteristics for the five classes of antibody, the functional characteristics of antibody binding, and the fact that the antibody technology is well developed and mature." Synopsis of Application of Written Description Guidelines, at 60, available at http://www.uspto.gov/web/patents/guides.htm ("Application of Guidelines")."
> 285 F.3d 1013 (Fed. Cir. 1992)

Applicants submit that the written description requirement is similarly satisfied for the claimed T cells, since the structural characteristics of T cells and the functional characteristics associated with T cell binding to an antigen are well known and established in the art.

Applicants further submit that the written description requirement is satisfied, since claim 12 is a product-by-process claim, and the instant specification demonstrates that the process was used to successfully produce the claimed product. Applicants submit that the written description requirement is satisfied for a product-by-process claim where the process has been used to produce the product. *Id.*, endnote 52, *citing Fiers v. Revel*, 984 F.2d 1164, 1169 (Fed. Cir. 1993) and *Amgen Inc. v. Chugai Pharmaceutical Co.*, 927 F.2d 1200, 1206 (Fed. Cir. 1991). Applicants also submit that Example 27 describes the successful stimulation and expansion of T cells specific for immunogenic portions of the polypeptide having the amino acid sequence of SEQ ID NO:809, according to the claimed method, thus satisfying the written description requirement for claim 12.

Applicants submit that the instant specification provides sufficient description of polypeptides having at least 90% identify to the amino acid sequence of SEQ ID NO:809 (L552S) to demonstrate that Applicants were in possession of the claimed invention at the time of filing. Under the Examination Guidelines set forth by the Patent and Trademark Office, the written description requirement for a claimed genus may be satisfied by the description of a representative number of species or the disclosure of relevant, identifying characteristics, sufficient to show the applicant was in possession of the claimed genus. Guidelines for Examination of Patent Applications under the 35 U.S.C. § 112, ¶1, "Written Description" Requirement, 66 Fed. Reg. 1099, at 1106. Applicants submit that the instant application meets both criteria.

First, Applicants submit that the instant specification describes a representative number of claimed species by providing the sequence of polypeptides of SEQ ID NO:809, as well as describing sequences with at least 90% identity to these polypeptides. Applicants note that the description of a representative number of species does not require the description to be of such specificity that it would provide individual support for each species the genus embraces. *Id.* Applicants submit that by providing a reference sequence and the percent identity limitation, the specification adequately describes a representative number of claimed variants, since one skilled in the art would readily identify a claimed sequence and recognize that Applicants were in possession of said sequence at the time the application was filed.

In addition, Applicants submit that the instant specification discloses sufficient identifying characteristics for L552S-related polypeptides that are common to the genus of polypeptides with at least 90% identity to the polypeptide of SEQ ID NO:809, since it provides both a reference sequence and percent identity limitations. Polypeptides of this genus clearly share the structural characteristic of having at least 90% identity with the polypeptide sequence of SEQ ID NO:809. Moreover, Applicants submit that the instant application satisfies both the possession and notice functions of the written description requirement, since one of skill in the art would clearly be able to recognize and identify a claimed polypeptide based upon the instant specification and would also understand that Applicants had possession of said polypeptides at the time the application was filed.

Further still, Applicants submit that the tumor-associated expression profile identified by Applicants for polypeptides of SEQ ID NO:809 offers yet another important identifying characteristic from which the skilled individual would conclude that Applicants were in possession of the genus of polypeptides having at least 90% identity with the polypeptide of SEQ ID NO:809 at the time this application was filed. One skilled in the art would readily understand that L552S polypeptides possess a variety of utilities, including, for example, both diagnostic and therapeutic uses, and that many of these utilities rely upon the tumor specificity of the polypeptides of SEQ ID NO:809, a property only first identified by Applicants' instant disclosure. Furthermore, one skilled in the art would recognize that these uses do not necessarily require a polypeptide with the exact or entire sequence of a full length L552S polypeptide.

Polypeptide variants and fragments may be used, for example, to stimulate and/or expand T-cells specific for L552S polypeptides, and such T-cells would be useful in the context of Applicants' disclosure, despite the fact that the variant sequence used to stimulate the T-cells was not identical to the entirety of the polypeptide of SEQ ID NO:809, or a portion thereof

Furthermore, Applicants submit that the skilled artisan would clearly understand that such variants and fragments, to the extent they are related to SEQ ID NO:809 and share immunological cross-reactivity with the L552S polypeptide of SEQ ID NO:809, were indeed in the possession of Applicants at the time of filing. In this regard, Applicants submit that the skilled artisan would undoubtedly view L552S polypeptide variants and fragments as falling within the scope of Applicants' invention and as being in possession of Applicants, based on their sequence identity to SEQ ID NO:809, based on the tumor specificity identified for SEQ ID NO:809, and further based on the clear understanding and expectation on the part of the skilled artisan that variants and fragments of the L552S polypeptides of SEQ ID NO:809 are clearly useful in the context of Applicants' disclosure, for example, in stimulating and expanding T-cells specific for SEQ ID NO: 809. Applicants thus submit that to accept the Action's position that Applicants were only in possession of polypeptides consisting of the single species of SEQ ID NO:809, in the context of the currently claimed methods, would inappropriately exclude an entire class of polypeptides related to SEQ ID NO:809 that the skilled individual would appreciate were useful in stimulating T-cells specific for SEQ ID NO: 809, and therefore in Applicants' possession at the time of filing. This understanding and expectation on the part of the skilled artisan is submitted to be soundly based upon fundamental scientific principles.

In light of these remarks, Applicants submit that the instant application satisfies the written description requirement for the claimed invention and respectfully request that this basis of rejection be withdrawn.

Rejection Under 35 U.S.C. § 112, Second Paragraph

Claims 21, 24 and 26 stand rejected under 35 U.S.C. § 112, second paragraph, for allegedly being indefinite in the term "an amino acid sequence of SEQ ID NO:809." More

specifically, the Action asserts that the preposition should be "the," instead of "an," since SEQ ID NO:809 discloses only a single sequence.

Applicants respectfully traverse this basis of rejection and submit that the skilled artisan would readily understand the scope of the claims. Nonetheless, solely to expedite prosecution and without acquiescence to this basis of rejection, claims 21, 24, and 26 have been amended to recite "the," instead of "an," as suggested by the Examiner. Accordingly, Applicants respectfully request that this basis of rejection be withdrawn.

Rejection Under 35 U.S.C. § 103(a)

Claims 12 and 20-26 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Yee *et al.* in view of Brinkmann *et al.* Specifically, the Action alleges that Yee *et al.* teaches a general method for stimulating and expanding T cells specific for a tumor protein, while Brinkmann *et al.* teaches XAGE-1, which comprises a region of 95 amino acids that are 100% identical to SEQ ID NO:809, including several of the immunogenic fragments recited in claims 23. The Action further asserts that in would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made to use the method of Yee *et al.* with the XAGE-1 protein of Brinkmann *et al.* to generate tumor reactive T cells.

Applicants respectfully traverse this basis of rejection and submit that the Action fails to establish a *prima facie* case of obviousness. Applicants note that to establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka,* 490 F.2d 981 (CCPA 1974). Applicants submit that the cited references, alone or in combination, fail to disclose each element of the claimed invention and, therefore, cannot anticipate the claims.

Specifically, Applicants submit that that Brinkmann *et al.* fail to disclose a polypeptide having at least 90% identity with the amino acid sequence of SEQ ID NO:809 or having at least 10 consecutive amino acid residues in common with the amino acid sequence of SEQ ID NO:809. While Brinkmann *et al.* describes the identification of ESTs for numerous genes of the GAGE/PAGE family and provides predicted partial amino acid sequences for several identified genes, Brinkmann *et al.* does not provide any amino acid sequence of

XAGE-1. Indeed, Brinkmann *et al.* indicates that two subclusters of XAGE-1 ESTs were identified; the first subcluster did not contain an open reading frame, and the second subcluster contained two open reading frames, the second of which had homology to GAGE proteins but did not contain an initiator methionine until the halfway into the composite sequence. Based upon these findings, Brinkmann *et al.* concludes that the amino acid sequence of XAGE-1 could not be determined and explicitly stated, "[b]ecause of the uncertainly with translation, this gene was omitted from Fig 3 [alignment of the deduced amino acid sequences of XAGE-2 and XAGE-3 with a typical GAGE gene]" (page 1447, column 2, lines 16-18). Accordingly, Applicants submit that Brinkmann *et al.* fails to describe the claimed polypeptides. Applicants further submit that Yee *et al.* fails to remedy this deficiency, since it also does not disclose the amino acid sequence of SEQ ID NO:809.

Regarding the amino acid sequence alignment results provided with the Action, Applicants submit that the database summary of the AF251237 locus indicates that the sequence did not become publicly available until August 23, 2000, which falls after the April 27, 2000 filing date of the Examiner's acknowledged priority, U.S. Application Serial No. 09/560,406. Accordingly, Applicants submit that the AF251237 database entry does not qualify as prior art under 35 U.S.C. § 103(a). Accordingly, Applicants submit that the Action fails to establish a *prima facie* case of obviousness of claims 12 and 20-26 and respectfully request that this basis of rejection be withdrawn.

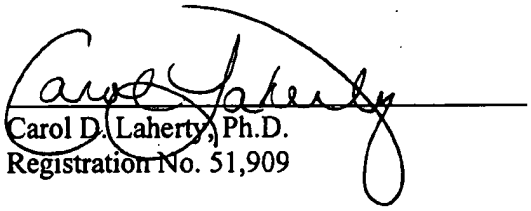
Applicants respectfully submit that all claims remaining in the application are now allowable. Favorable consideration and a Notice of Allowance are earnestly solicited. Applicants' attorney wishes to express her willingness to engage in a telephone interview to further the status of this application if any further concerns need to be addressed.

The Commissioner is authorized to charge any additional fees due by way of this Amendment, or credit any overpayment, to our Deposit Account No. 19-1090.

Respectfully submitted,

Robert A. Henderson *et al.*

SEED Intellectual Property Law Group PLLC



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